



200 Promenade du Portage
Place du Centre - 4th Floor
Gatineau, Quebec
K1A 1K8

Our file Reference

A12W0090-D1-A1

02 November 2012

Mr. Doug Sowder, President
International Aerobatic Club
EAA Aviation Center
P.O. Box 3086
Oshkosh, Wisconsin
54903-3086

Subject: AVIATION SAFETY ADVISORY A12W0090-D1-A1
Recovery from Inverted Spins in Pitts Special Aircraft

Dear Mr. Sowder,

On 12 July 2012, a single-seat, privately operated amateur-built Pitts Special S-1S biplane, registration C-FCHY, departed the Rocky Mountain House Aerodrome, Alberta, at approximately 1615 Mountain Daylight Time, on a local aerobatic training flight. About 15 minutes into the flight the aircraft entered a conventional upright spin at approximately 3000 feet above ground, rotated about 1 1/4 turns and then entered an inverted spin. The aircraft remained in the inverted spin for 10 to 12 rotations and stopped rotating in close proximity to the ground. After the inverted spin rotation stopped the aircraft continued to descend with little or no forward speed and struck the ground in an inverted 60 to 70 degree nose-down attitude. The aircraft sustained substantial damage and the pilot sustained fatal injuries.

In accordance with the Transportation Safety Board of Canada (TSB) Occurrence Classification Policy, the circumstances of this occurrence were assessed, and the occurrence was classified as a Class 5 occurrence. Consequently, TSB activity was limited to the collection of data, which has been recorded for safety analysis, statistical reporting, and archival purposes. The following paragraphs contain safety-related information derived during the assessment of this occurrence.

The pilot was a member of the International Aerobatics Club (IAC) and was training for competition aerobatics. There are five IAC competition categories for powered aircraft: Primary, Sportsman, Intermediate, Advanced and Unlimited¹. Each category requires the pilot to fly a different set of aerobatic sequences with varying degrees of difficulty. The pilot had progressed through the Primary and Sportsman competition categories, and the purpose of the accident

.../2

¹ <http://www.iac.org/programs/competition.html>

flight was to practice individual manoeuvres of the IAC 2012 Intermediate sequence. The IAC Intermediate sequence did not include any prolonged inverted manoeuvres, such as inverted spins. Records indicated the pilot had obtained introductory inverted spin flight training once in the past, during a dual instructional flight in 2008.

A publication titled *Pitts Special S-1S Aircraft Flight Manual Information* provides general information and guidance for amateur built versions of the Pitts Special S-1S aircraft. This publication was considered the equivalent to the FAA approved Airplane Flight Manual for the factory production version of the Pitts Special S-1S, with variable data related to specific production aircraft being omitted. The publication states that "For spin recovery, put ailerons neutral, apply full opposite rudder briskly and then apply nose-down elevator." This is considered the standard recovery procedure for recovery from an upright spin in conventional aircraft and is included in most light aircraft flight manuals. However, attempted recovery from an upright spin can sometime result in the aircraft inadvertently entering and remaining in an inverted spin. Hands-on recovery from an inverted spin requires a pilot to stop the spin with opposite rudder and apply nose-up elevator (aft stick), rather than nose-down elevator (forward stick), to break the stall. The Flight Manual Information publication provided no information regarding recognition and recovery from inverted spins.

A common problem associated with spin accidents in Pitts Special aircraft is pilot confusion over whether the aircraft is in an upright or inverted spin. Pilot confusion over the direction of yaw may be another factor ². The following emergency procedure, known as the Beggs/Meuller emergency spin recovery, is a proven spin recovery method that allows quick and easy recovery from any spin in a Pitts Special ³:

1. POWER OFF
2. REMOVE YOUR HAND FROM THE STICK
3. APPLY FULL OPPOSITE RUDDER UNTIL ROTATION STOPS
4. NEUTRALIZE RUDDER AND RECOVER TO LEVEL FLIGHT

Using this method it is not necessary to recognize whether the spin is upright or inverted, as the recovery is the same in either case. The emergency spin recovery is known to work for most but not all aerobatic aircraft ⁴.

The aircraft was observed from the ground to be in an inverted spin prior to impact. The pilot was twice advised over the radio to relax on the controls in an attempt to assist the pilot to regain control of the aircraft.

.../3

² Gene Beggs, *Spins in the Pitts Special* (Odessa, Texas: Gene Beggs, 2001), p. 3.

³ Beggs, *Spins in the Pitts Special*, p. 2.

⁴ Beggs, *Spins in the Pitts Special*, p. 32.

A recent search of the National Transportation Safety Board (NTSB) database identified 28 Pitts Special accidents where inverted spins were a factor.⁵ The TSB database contained no record of inverted spin accidents involving Pitts Special aircraft.

As shown in this occurrence, Pitts Special S-1S pilots not familiar with an effective recognition and/or recovery procedure from both upright and inverted spins may experience difficulty in recovering from an inverted spin, increasing the risk of collision with terrain. Therefore, the International Aerobatic Club may wish to remind its members of the importance of being familiar with the most effective spin recovery procedure for the aircraft they operate.

Yours sincerely,



Mark Clitsome
Director of Air Investigations
Transportation Safety Board of Canada

cc: Mr. Martin Eley
Director General, Civil Aviation
Transport Canada
330 Sparks Street, Place de Ville
Tower C, 5th Floor, Area A
Ottawa, Ontario
K1A 1K8

Mr. Stuart Horn
President, Aviat Aircraft Inc.
672 S. Washington Street
P.O. Box 1240
Afton, Wyoming, USA
83110

.../4

⁵ NTSB Investigations ATL85FA276, ATL87DKG06, CHI00LA239, CHI02FA294, CHI05LA015, CHI77FEG21, CHI79FEI33, CHI83FA125, CHI84LA385, CHI91DCQ01, DEN91DTE02, FTW81FQG57, FTW81FRA34, LAX05CA200, LAX67A0108, LAX78FUJ74, LAX80FVD12, LAX84FA055, LAX85LA393, MIA01FA041, MIA77FKT28, NYC72DGM48, NYC93FA079, NYC99FA100, OAK70FVM22, OAK79FVM18, SEA02LA012, SEA83FA045

BACKGROUND INFORMATION

Occurrence No.: A12W0090

This Safety Communication No.: A12W0090-D1-A1

TSB Contact: Bill Kemp (IIC)
Phone: (780) 495-2003
Email: bill.kemp@tsb-bst.gc.ca